REMARKS

Applicants respectfully request reconsideration and further examination of the present application.

I. Status of the Claims

Applicants acknowledge the Office's determination that Applicants' previous traversal of the Election of Species requirement was persuasive. Accordingly, claims 1-77 are currently pending and under consideration.

II. Rejections under 35 U.S.C. §112, Second Paragraph

Reconsideration is respectfully requested of the rejection of claims 40-52 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

A. Claims 49-52

Applicants respectfully submit that claim 49 does not exclude the presence of a protic solvent. Rather, this claim simply states that the polymer electrolyte *comprises labile protons* in the absence of a protic solvent, a protic solvent for example either having never been added to the electrolyte or having previously been removed.

As noted in the specification on page 35, lines 3-12, the amine group nitrogens of the claimed polymer electrolyte may form primary, secondary, or tertiary ammonium salts, as a result of, for example, polymerization, substitution, cross-linking, etc., at the nitrogen atoms. In such instances, the present polymer electrolytes, and more specifically the amine group nitrogen atoms, are *inherently protonated*; that is, protons are *inherently present* within the polymers, rather than being introduced by means of the addition of a protic solvent.

However, the specification further notes, in the text immediately following the above-noted passage (i.e., page 35, lines 13-21), that a protic solvent *may additionally* be used. Specifically, the specification states:

> Although a polymer of the present invention may or may not have some inherent degree of proton conductivity once prepared, in general proton conductivity may be further enhanced, or imparted, by the introduction of additional protons. As described above with respect to the metal salt containing polymers, the introduction of protons may be achieved during the polymerization process or, alternatively, after the polymerization process has been completed. Generally speaking, the concentration of protons in the polymer is increased by introducing a protic solvent into it; that is, the polymer may in some embodiments be "swollen" with a protic solvent.

In view of the foregoing, Applicants respectfully submit claim 49, as well as claims 50-52 depending therefrom, are not indefinite. Reconsideration and withdrawal of the rejection of these claims are therefore respectfully requested.

B. Claims 40-48

Claim 40, from which claims 41-48 depend, is directed to a covalently cross-linked polymer electrolyte which comprising a polymer backbone containing amine groups, a cross-linker, and one or more solvent moieties covalently bound thereto.

Contrary to the Office's assertion, the specification states on page 34, lines 11-16, that a solvent moiety may be attached directly to the polymer backbone, for example as a substituent on the amine nitrogen atom. *Alternatively*, however, the solvent moiety may be indirectly attached to the polymer backbone, for example by

tethering or attachment to the cross-linker. As an example of this latter approach, it is stated that the solvent moiety could be built into the cross-linker, such that cross-linking and introduction of the solvent moiety occurs at the same time by the use of a single compound.

In view of the foregoing, Applicants respectfully submit claims 40-48 are not indefinite, because claim 40, from which claims 41-48 depend, clearly indicates, consistent with the above-noted text in the specification, that the solvent moieties are covalently attached to either the polymer backbone, the amine groups therein, or the cross-linker. Reconsideration and withdrawal of the rejection of these claims are therefore respectfully requested.

III. Rejections under 35 U.S.C. §102(b)

Reconsideration of the rejection of claims 1, 2, 5-11, 30, 32, 34, 49 and 53-73 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,789,106 (Rosenmeier et al.) is respectfully requested, in as much as Applicants respectfully submit that each and every element as set forth in the rejected claims is not described in this patent, as further detailed below.

A. Claims 1, 2, 5-11, 30, 32, 34 and 57-60

Claim 1, from which claims 2, 5-11, 30, 32 and 34 depend, is directed to a covalently cross-linked polymer electrolyte. The polymer electrolyte comprises a polymer backbone containing amine groups, a cross-linker, and a dissolved or dispersed metal salt, wherein the cross-linked polymer electrolyte is inert to lithium.

Claim 57, from which claims 58-60 depend, is directed to a battery which, in relevant part, comprises a covalently cross-linked polymer electrolyte having a polymer backbone containing amine groups, a cross-linker, and a dissolved or dispersed metal salt, wherein the cross-linked polymer electrolyte is inert to lithium.

As noted in the specification on page 18, line 27 to page 19, line 23, a cross-linker is selected to yield a cross-linked polymer electrolyte that is inert to, or even acts to enhance, ion transport there through. In the case of lithium anode systems, both the base polymer and the cross-linker functionality are preferably not reduced by the lithium. Difunctional alkyl and alkylarenes that have two or more leaving groups that allow nucleophilic substitution reactions to take place with the nucleophilic nitrogen atoms will produce cross-linked networks. In the case of PEI, for example, these cross-linkers produce tertiary ammonium functional groups with acidic protons that can be reduced by the lithium, and"kill" the system. These sites are therefore neutralized by treatment with base to form suitably inert tertiary amine sites. On the other hand, reaction of these cross-linkers with N-alkylpolyamines (e.g., PMEI) produce quaternary ammonium functional groups which are largely inert to lithium, and thus neutralization is not needed.

Notably, no reference is made in Rosenmeier et al. to a cross-linked polymer electrolyte that is inert to lithium. In fact, Applicants respectfully submit the present rejection is moot with respect to the above-noted claims, in as much as the Office has failed to comment at all on this claim element, or assert that Rosenmeier et al. in any way disclose it.

It is to be further noted that, while Rosenmeier et al. make general references to cross-linking (see, e.g., column 5, line 65 to column 6, line 1), they fail to specifically disclose a covalently cross-linked polymer electrolyte having a polymer backbone containing amine groups therein.

In view of the foregoing, claims 1 and 57 are submitted as novel over Rosenmeier et al., because they fail to disclose each and every element recited in claim 1 or claim 57. In as much as claims 2, 5-11, 30, 32 and 34 depend from claim 1, and claims 58-60 depend from claim 57, these claims are submitted as novel over Rosenmeier et al. for at least the same reasons as those noted for claims 1 and 57,

respectively. Although these claims include additional novel features, these features will not be addressed at this time in the interest of brevity.

B. Claims 49 and 53-56

Claim 49 is directed to a covalently cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups, a cross-linker, and labile protons therein in the absence of a protic solvent.

Claim 53, from which claims 54-56 depend, is directed to a fuel cell which, in relevant part, comprises a proton-conducting, covalently cross-linked polymer electrolyte having a polymer backbone containing amine groups, a cross-linker, and labile protons therein in the absence of a protic solvent.

It is to be noted that the amine groups in a polymer backbone, such as in polyethylenimine, do not inherently form labile protons. Rather, such protons result from, for example, the formation of ammonium salts in the polymer electrolytes. More specifically, as stated in the present specification (see, e.g., page 35, lines 3-12), the amine group nitrogens of the present polymer electrolytes may form primary, secondary, or tertiary ammonium salts, as a result of, for example, polymerization, substitution, cross-linking, etc., at the nitrogen atoms. In such instances, the present polymer electrolytes, and more specifically the amine group nitrogen atoms, are inherently protonated; that is, protons are inherently present within the polymers, rather than being introduced by means of the addition of a protic solvent.

As previously noted, while Rosenmeier et al. make general references to cross-linking, they fail to specifically disclose a covalently cross-linked polymer electrolyte having a polymer backbone containing amine groups therein. Furthermore, they make no reference to labile protons being present in the polymers disclosed therein in the absence of a protic solvent.

In view of the foregoing, claims 49 and 53 are submitted as novel over Rosenmeier et al., because they fail to disclose each and every element recited therein. In as much as claims 54-56 depend from claim 53, these claims are submitted as novel over Rosenmeier et al. for at least the same reasons as those noted for claim 53. Although these claims include additional novel features, these features will not be addressed at this time in the interest of brevity.

C. Claims 61-65

Claim 61, from which claims 62-65 depend, is directed to a gradient battery comprising a continuous, covalently cross-linked poly(amine) film, the polymer film comprising metal ions, a negative electrode region, a positive electrode region, and an electrolyte region dispose there between which, during charge or discharge of the battery, enable the passage of metal ions or protons from one electrode to the other.

As noted in the present specification (see, e.g., page 42, lines 1-14), the gradient battery of the present invention is a battery having a single, unitary cell structure; that is, the claimed battery is a continuous polymer film having regions which serve as the negative electrode, positive electrode, and electrolyte. Therefore, as illustrated in Figure 3, the components of the claimed battery are connected to each other through a continuous, covalently bonded network, and thus do not have large or macro-scale interfaces between the anode, polymer electrolyte and cathode, which are present in conventional batteries. Conventional batteries have such large or macro-scale interfaces because, in contrast, the separate components thereof are discontinuously, and thus also non-covalently, connected to each other. These large or macro-scale interfaces are a well-recognized problem associated with the conductivity and performance of conventional batteries.

Rosenmeier et al. clearly fail to disclose a battery as claimed; that is, they fail to disclose a battery comprising a continuous, covalently cross-linked poly(amine) film which comprises metal ions, a negative electrode region, a positive electrode region,

and an electrolyte region disposed there between. To the extent Rosenmeier et al. disclose forming a battery, the battery has a conventional design. Thus, it does not have a single, unitary cell structure, but rather has macro-scale interfaces between the components thereof.

In view of the foregoing, claim 61 is submitted as novel over Rosenmeier et al., because they fail to disclose each and every element recited therein. In as much as claims 62-65 depend from claim 61, these claims are submitted as novel over Rosenmeier et al. for at least the same reasons as those noted for claim 61. Although these claims include additional novel features, these features will not be addressed at this time in the interest of brevity.

D. Claims 66-73

Claim 66, from which claims 67-69 depend, is directed to a covalently cross-linked polymer single ion electrolyte. The polymer electrolyte comprises a polymer backbone containing amine groups, a cross-linker, and an ion pair, one member of the pair being covalently attached to the polymer backbone and the other being capable of diffusing through the polymer electrolyte upon the application of an electric field.

Claim 70, from which claims 71-73 depend, is directed to an electrolytic cell which, in relevant part, comprises a covalently cross-linked polymer single ion electrolyte having a polymer backbone containing amine groups, a cross-linker, and an ion pair, one member of the pair being covalently attached to the polymer backbone and the other being capable of diffusing through the polymer electrolyte upon the application of an electric field.

Although Rosenmeier et al. make general references to cross-linking, polyalkyleneimines, including polyethyleneimine, and ion-conductive polymers containing covalently bound ion complexes, they fail to specifically disclose a covalently cross-linked polymer electrolyte having a polymer backbone containing amine groups

therein. Notably, the polymer illustrated in Example 10 of Rosenmeier et al. is not cross-linked. Furthermore, the illustrated polymer does not contain amine groups in the polymer backbone (i.e., groups wherein a carbon atoms is bound to a nitrogen atom). Rather, the illustrated polymer contains phosphazene groups (i.e., groups wherein a phosphorous atom is bound to a nitrogen atom by an unsaturated bond).

In view of the foregoing, claims 66 and 70 are submitted as novel over Rosenmeier et al., because they fail to disclose each and every element recited therein. In as much as claims 67-69 depend from claim 66, and claims 71-73 depend from claim 70, these claims are submitted as novel over Rosenmeier et al. for at least the same reasons as those noted for claims 66 and 70, respectively. Although these claims include additional novel features, these features will not be addressed at this time in the interest of brevity.

IV. Rejections under 35 U.S.C. §103

Reconsideration of the present rejections under 35 U.S.C. §103 is respectfully requested.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. And third, the prior art reference must teach or suggest all of the claim elements. MPEP §2142. In the instant case, Applicants respectfully submit, for the reasons set forth in detail below, that the claimed inventions are not obvious in view of the cited references because these references, both alone and in combination, fail to disclose or suggest all of the claim elements. Additionally, in at least some instances, motivation to combined the cited references is lacking.

A. Rejection of Claims 3 and 4 as being Unpatentable over Rosenmeier et al. in view of JP 06-329793

Reconsideration is respectfully requested of the rejection of claims 3 and 4 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of Japanese Patent Publication No. JP 06-329793 (hereinafter "JP '793").

Claim 1, from which claims 3 and 4 depend, is directed to a covalently cross-linked polymer electrolyte. The polymer electrolyte comprises a polymer backbone containing amine groups, a cross-linker, and a dissolved or dispersed metal salt, wherein the cross-linked polymer electrolyte is inert to lithium.

Rosenmeier et al. do make general references to cross-linking and polyalkyleneimines. They fail, however, to disclose or suggest a covalently cross-linked polymer electrolyte having a polymer backbone containing amine groups, a cross-linker, and a dissolved or dispersed metal salt, wherein the cross-linked polymer electrolyte is inert to lithium. In fact, no reference is even made by Rosenmeier et al. to polymer electrolytes that are inert to lithium.

Like Rosenmeier et al., JP '793 does reference cross-linking and polyethyleneimine. It does not, however, disclose or suggest a covalently cross-linked polymer electrolyte having a polymer backbone containing amine groups, a cross-linker, and a dissolved or dispersed metal salt, wherein the cross-linked polymer electrolyte is inert to lithium. In fact, again like Rosenmeier et al., no reference is even made in JP '793 to polymer electrolytes that are inert to lithium. Rather, JP '793 discloses the use of diisocyanate cross-linking agents (see, e.g., the Abstract, paragraph [0007] and Formula 1, wherein it is indicated that each "X" of the cross-linking agent is an isocyanate group). Cross-linking using diisocyanates is known to result in the formation of urethane linkages or functionalities, *which are known to be reducible by lithium.*

Accordingly, taken together, Rosenmeier et al. and JP '793 fail to disclose or suggest all of the claim elements of claim 1, and thus of claims 3 and 4, in as much as

these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises amines in the polymer backbone and which is inert to lithium. Claim 1 is therefore submitted as patentable over the cited references. In as much as claims 3 and 4 depend from claim 1, these claims are submitted as patentable over the cited references for at least the same reasons as those noted with respect to claim 1. Although these claims include additional patentable features, these features will not be addressed at this time in the interests of brevity.

B. Rejection of Claims 19-22 and 25 as being Unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,501,919

Reconsideration is respectfully requested of the rejection of claims 19-22 and 25 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,501,919 (Paul et al.).

The failures in the disclosure provided by Rosenmeier et al. have been previously noted.

Paul et al. fail to disclose or suggest a polymer electrolyte that is covalently cross-linked. In fact, contrary to the Office's assertion, Paul et al. make no reference to cross-linking. Accordingly, they also fail to disclose or suggest a covalently cross-linked electrolyte which is inert to lithium. Rather, Paul et al. simply disclose the preparation of branched polyethylenimine which has a lithium salt therein.

Accordingly, taken together, Rosenmeier et al. and Paul et al. fail to disclose or suggest all of the claim elements of claim 1, and thus of claims 19-22 and 25, in as much as these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is inert to lithium. Claim 1 is therefore submitted as patentable over the cited references. In as much as claims 19-22 and 25 depend from claim 1, these claims are submitted as patentable over the cited references for at least the same reasons as those noted with

respect to claim 1. Although these claims include additional patentable features, these features will not be addressed at this time in the interests of brevity.

C. Rejection of Claims 23, 24, 26 and 29 as being Unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,501,919 and U.S. Patent No. 5,648,186

Reconsideration is respectfully requested of the rejection of claims 23, 24, 26 and 29 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,501,919 (Paul et al.), and further in view of U.S. Patent No. 5,648,186 (Daroux et al.).

The failures in the disclosure provided by Rosenmeier et al. and Paul et al. have been previously noted.

Daroux et al., like Rosenmeier et al. and Paul et al., fail to disclose or suggest a covalently cross-linked polymer electrolyte which is inert to lithium. Rather, Daroux et al. disclose dendrimers of, for example, polyethylenimine, derivatized by growing ethylene oxide arms therefrom (see, e.g., column 7, lines 16-20). Elsewhere, they *generally* disclose the *optional* cross-linking of dendrimers (see, e.g., column 6, lines 25-31). However, the only specific details provided with respect to cross-linking involve the use of hexamethylene diisocyanate (see, e.g., column 7, lines 16-20, as well as Examples 2, 4, 12 and 13). Cross-linking using diisocyanates is known to result in the formation of urethane linkages or functionalities, *which are known to be reducible by lithium.*

Accordingly, taken together, the combination of Rosenmeier et al., Paul et al. and Daroux et al. fails to disclose or suggest all of the claim elements of claim 1, in as much as these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is *inert to lithium.* Rather, this combination of references, *at most*, discloses or suggest

only the formation of a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is *reduced* by lithium, and thus is *not inert* to it.

Claim 1 is therefore submitted as patentable over the cited references. In as much as claims 23, 24, 26 and 29 depend from claim 1, these claims are submitted as patentable over the cited combination of references for at least the same reasons as those noted with respect to claim 1. Although these claims include additional patentable features, these features will not be addressed at this time in the interests of brevity.

D. Rejection of Claims 23, 24, 26, 28 and 29 as being Unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,501,919 and U.S. Patent No. 6,096,453

Reconsideration is respectfully requested of the rejection of claims 23, 24, 26, 28 and 29 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,501,919 (Paul et al.), and further in view of U.S. Patent No. 6,096,453 (Grunwald et al.).

The failures in the disclosure provided by Rosenmeier et al. and Paul et al. have been previously noted.

Grunwald et al. fail to disclose or suggest a covalently cross-linked polymer electrolyte which comprises amine groups in the polymer backbone and which is inert to lithium. Grunwald et al. generally reference numerous polymers, copolymers, etc., some of which would include amines in the polymer backbone (see, e.g., column 4, lines 40 to column 5, line 58). They also reference cross-linked polymers, which could include polymers having amines in the polymer backbone (see, e.g., column 10, lines 49-60). However, it is to be noted that, although cross-linking is referenced, few details are provided with respect to the cross-linkers that may be used. Furthermore, there is

no reference to cross-linkers that could be employed with a polymer having amine groups in the backbone, in order to yield a cross-linked polymer which is inert to lithium.

Accordingly, taken together, the combination of Rosenmeier et al., Paul et al. and Grunwald et al. fails to disclose or suggest all of the claim elements of claim 1, in as much as these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is *inert to lithium*. Claim 1 is therefore submitted as patentable over the cited references. In as much as claims 23, 24, 26, 28 and 29 depend from claim 1, these claims are submitted as patentable over the cited combination of references for at least the same reasons as those noted with respect to claim 1. Although these claims include additional patentable features, these features will not be addressed at this time in the interests of brevity.

E. Rejection of Claims 23, 26, 28 and 29 as being Unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,501,919 and U.S. Patent No. 5,964,903

Reconsideration is respectfully requested of the rejection of claims 23, 24, 26, 28 and 29 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,501,919 (Paul et al.), and further in view of U.S. Patent No. 5,964,903 (Gao et al.).

The failures in the disclosure provided by Rosenmeier et al. and Paul et al. have been previously noted.

Gao et al. fail to disclose or suggest a polymer electrolyte that is covalently cross-linked. In fact, Gao et al. fail to even reference cross-linking. Accordingly, they also fail to disclose or suggest a covalently cross-linked electrolyte which is inert to lithium. Rather, Gao et al. simply disclose plasticizers which are suitable for use in fabricating electrochemical cells (see, e.g., column 1, line 65 to column 2, line 4).

Accordingly, taken together, the combination of Rosenmeier et al., Paul et al. and Gao et al. fails to disclose or suggest all of the claim elements of claim 1, in as much as these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is *inert to lithium*. Claim 1 is therefore submitted as patentable over the cited references. In as much as claims 23, 26, 28 and 29 depend from claim 1, these claims are submitted as patentable over the cited combination of references for at least the same reasons as those noted with respect to claim 1. Although these claims include additional patentable features, these features will not be addressed at this time in the interests of brevity.

F. Rejection of Claims 33, 35 and 36 as being Unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,964,903

Reconsideration is respectfully requested of the rejection of claims 33, 35 and 36 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,964,903 (Gao et al.).

As previously noted, Rosenmeier et al. fail to disclose or suggest a covalently cross-linked polymer electrolyte having a polymer backbone containing amine groups, a cross-linker, and a dissolved or dispersed metal salt, wherein the cross-linked polymer electrolyte is inert to lithium. Gao et al. not only fail to disclose or suggest a polymer electrolyte that is covalently cross-linked, they do not even reference cross-linking. As such, they also fail to disclose a cross-linked polymer electrolyte that is inert to lithium.

Accordingly, taken together, the combination of Rosenmeier et al. and Gao et al. fails to disclose or suggest all of the claim elements of claim 1, in as much as these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is *inert to lithium*. Claim 1 is therefore submitted as patentable over the cited references. In as much as claims 33, 35 and 36 depend from claim 1, these claims are submitted as patentable over the cited combination of references for at least the same reasons as

those noted with respect to claim 1. Although these claims include additional patentable features, these features will not be addressed at this time in the interests of brevity.

G. Rejection of Claims 37 and 38 as being Unpatentable over Rosenmeier et al. in view of Harris et al.

Reconsideration is respectfully requested of the rejection of claims 37 and 38 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of Harris et al.

The failures in the disclosure provided by Rosenmeier et al. have been previously noted.

Harris et al. fail to disclose or suggest a polymer electrolyte that is covalently cross-linked. In fact, they fail to even reference cross-linking. Accordingly, they also fail to disclose or suggest a covalently cross-linked polymer electrolyte which comprises amine groups in the polymer backbone and which is inert to lithium. Rather, Harris et al. disclose only branched and linear polyethylenimine.

Accordingly, taken together, the combination of Rosenmeier et al. and Harris et al. fails to disclose or suggest all of the claim elements of claim 1, in as much as these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is *inert to lithium*. Claim 1 is therefore submitted as patentable over the cited references. In as much as claims 37 and 38 depend from claim 1, these claims are submitted as patentable over the cited combination of references for at least the same reasons as those noted with respect to claim 1. Although these claims include additional patentable features, these features will not be addressed at this time in the interests of brevity.

H. Rejection of Claim 39 as being Unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,648,186 and U.S. Patent No. 4,578,326

Reconsideration is respectfully requested of the rejection of claim 39 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of U.S. Patent No. 5,648,186 (Daroux et al.) and U.S. Patent No. 4,578,326 (Armand).

The failures in the disclosure provided by Rosenmeier et al. and Daroux et al. have been previously noted.

Armand et al. fail to disclose or suggest a polymer electrolyte that is covalently cross-linked. In fact, they fail to even reference cross-linking. Furthermore, they fail to disclose or suggest a polymer electrolyte comprising amine groups in the polymer backbone. They therefore also fail to disclose or suggest a covalently cross-linked polymer electrolyte which comprises amine groups in the polymer backbone and which is inert to lithium. Rather, Armand et al. disclose polymers derived from ethylene oxide (see, e.g., column 1, lines 28-31).

Given that the disclosure of Armand et al. is unrelated to polymer electrolytes comprising amine groups in the polymer backbone, motivation to combine this reference with either Rosenmeier et al. or Daroux et al. is clearly lacking. However, even if combined, the combination of Rosenmeier et al., Daroux et al. and Armand et al. fails to disclose or suggest all of the claim elements of claim 1, in as much as these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is *inert to lithium*.

Claim 1 is therefore submitted as patentable over the cited references. In as much as claim 39 depends from claim 1, this claim is submitted as patentable over the cited combination of references for at least the same reasons as those noted with

respect to claim 1. Although this claim includes additional patentable features, they will not be addressed at this time in the interests of brevity.

I. Rejection of Claims 74-77 as being Unpatentable over Rosenmeier et al. in view of U.S. Patent No. 3,885,069

Reconsideration is respectfully requested of the rejection of claims 74-77 under 35 U.S.C. §103 as being unpatentable over Rosenmeier et al. in view of U.S. Patent No. 3,885,069 (Roberts et al.)

The failures in the disclosure provided by Rosenmeier et al. have been previously noted.

Roberts et al. fail to disclose or suggest a covalently cross-linked polymer electrolyte which comprises amine groups in the polymer backbone and which is inert to lithium. Roberts et al. does disclose the preparation of cross-linked polyethylenimine using 1,2-dichloroethane (see, e.g., column 1, line 61 to column 2, line 23, and Examples 2 and 3). However, this reference is unrelated to the preparation of a polymer electrolyte. Rather, it is directed to the use of the disclosed cross-linked polymer in the preparation of cotton derivatives for ecological applications (see, e.g., column 1, lines 11 to 23 and Examples 6-9). As such, Roberts et al. provide no details with respect to treatment of the cross-linked polymer, so as to render it inert to lithium.[1] In fact, Roberts et al. do not even reference lithium or the need to be inert thereto.

Given that the disclosure of Roberts et al. is unrelated to polymer electrolytes, motivation to combine this reference with Rosenmeier et al. is clearly lacking. However,

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[1] As noted in the present specification on page 18, line 27 to page 19, line 23, difunctional alkyls, such as the 1,2-dichloroethane used by Roberts et al., will produce a cross-linked network. However, in the case of polyethylenimine, these cross-linkers produce tertiary ammonium functional groups with acidic protons that can be reduced by the lithium, and thus "kill" the system. To prevent this from occurring, these sites are neutralized by treatment with base to form suitably inert tertiary amine sites.

even if combined, the combination of Rosenmeier et al. and Roberts et al. fails to disclose or suggest all of the claim elements of claim 1, in as much as these references collectively fail to disclose or suggest a cross-linked polymer electrolyte which comprises a polymer backbone containing amine groups and which is *inert to lithium.*

Claims 1 and 57 are therefore submitted as patentable over the cited references. In as much as claims 74 and 75 depends from claim 1, and claims 76 and 77 depend from claim 57, these claims are submitted as patentable over the cited combination of references for at least the same reasons as those noted with respect to claim 1 and 57, respectively. Although these claims include additional patentable features, they will not be addressed at this time in the interests of brevity.

V. Allowable Subject Matter

Applicants respectfully acknowledge the Office's finding that claims 40-48 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. §112, second paragraph.

Applicants also respectfully acknowledge the Office's finding that claims 12-18 would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims.

CONCLUSION

In view of the foregoing, favorable reconsideration and allowance of all pending claims are respectfully requested.

Applicants hereby request an extension of time to and including March 3, 2005 for filing a response to the above-referenced Office action. A check in the amount of $60.00, in payment of the applicable one (1) month extension fee is enclosed herewith.

The Commissioner is hereby authorized to charge any underpayment or credit any overpayment to Deposit Account No. 19-1345.

Respectfully submitted,

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*Enclosure